

WHAT IS CLAIMED IS:

1. A network interface device, comprising:

a first interface operable to receive at least two incoming calls over a subscriber line;

5 a second interface operable to facilitate communication between the first interface and a first telephone line and between the first interface and a second telephone line, the second interface also operable to generate one or more first ring voltages on the first  
10 telephone line and one or more second ring voltages on the second telephone line; and

a processor coupled to the first interface and the second interface, the processor operable to instruct the second interface to generate the first and second ring  
15 voltages in response to receiving the incoming calls, the processor also operable to allocate the first and second ring voltages among the first and second telephone lines to ensure that a total instantaneous load placed on the second interface does not exceed a determined threshold  
20 level.

2. The network interface device of Claim 1, wherein the processor is operable to allocate the first and second ring voltages by staggering the first and  
25 second ring voltages such that the one or more first ring voltages on the first telephone line are generated at different times than the one or more second ring voltages on the second telephone line.

10017209.121301

3. The network interface device of Claim 2,  
wherein the processor staggers the first and second ring  
voltages after determining that the total instantaneous  
load placed on the first and second telephone lines  
5 exceeds the determined threshold level.

4. The network interface device of Claim 1,  
wherein the processor is operable to allocate the first  
and second ring voltages by instructing the second  
10 interface to generate the first and second ring voltages  
simultaneously.

5. The network interface device of Claim 4,  
wherein the processor instructs the second interface to  
15 generate the first and second ring voltages  
simultaneously after determining that the total  
instantaneous load placed on the first and second  
telephone lines does not exceed the determined threshold  
load.

20

6. The network interface device of Claim 1,  
wherein the second interface is further operable to  
measure a load placed on each of the telephone lines.

10017209.121301

7. The network interface device of Claim 1, wherein the processor is further operable to:

extract class of service information from the incoming calls; and

5 communicate the class of service information for each incoming call to the telephone line associated with the incoming call during the generation of the ring voltage on the telephone line associated with the incoming call.

10

8. The network interface device of Claim 1, wherein:

the second interface is further operable to decode dual-tone multi-frequency touch tones received over one  
15 of the telephone lines and to communicate the decoded tones to the processor; and

the processor is further operable to:

map all telephone numbers associated with the telephone lines to a selected telephone line in response  
20 to a first function identified by the decoded tones;

map a selected telephone number to a selected telephone line in response to a second function identified by the decoded tones; and

25 redirect an incoming call from one of the telephone lines to another of the telephone lines in response to a third function identified by the decoded tones.

10017209.121301

9. The network interface device of Claim 1, further comprising a local power supply operable to supply at least some power to at least one of the processor, the first interface, and the second interface;

5 wherein the network interface device draws power from the subscriber line after the local power supply fails; and

wherein the second interface remains operable to communicate over at least one of the telephone lines  
10 after the local power supply fails.

10. The network interface device of Claim 1, wherein the processor is further operable to instruct a switch to alternately couple one of the telephone lines  
15 to either the second interface or a splitter, the splitter operable to receive ringing power for the telephone line and line power for the network interface device, the splitter operable to communicate the line power to the network interface device and the ringing  
20 power to the telephone line.

11. The network interface device of Claim 1, further comprising a third interface coupled to the processor and operable to communicate with at least one  
25 digital device.

10017209.121301

12. The network interface device of Claim 11,  
wherein:

the first interface comprises at least one of a  
Digital Subscriber Line (DSL) interface, a cable  
5 interface, and a wireless interface;

the second interface comprises:

at least one subscriber line interface circuit  
coupled to at least one of the telephone lines and  
operable to generate the ring voltage on the at least one  
10 telephone line;

at least one codec coupled to at least one  
subscriber line interface circuit and operable to convert  
analog information into digital information and to  
convert digital information into analog information; and

15 a digital signal processor coupled to the at  
least one codec and to the processor, the digital signal  
processor operable to sample digital information from the  
at least one codec and to communicate the samples to the  
processor, the digital signal processor also operable to  
20 receive digital information from the processor and  
communicate the digital information to the at least one  
codec; and

the third interface comprises at least one of a Home  
Phoneline Network Alliance interface, an Ethernet  
25 interface, a local area network interface, an optical  
interface, and a wireless interface.

13. The network interface device of Claim 1,  
wherein each of the one or more first ring voltages have  
30 a duration of two seconds followed by a four second  
pause.

10017209.121301

14. A method for providing service to a subscriber, comprising:

receiving at least two incoming calls over a subscriber line;

5 identifying a first telephone line and a second telephone line associated with the incoming calls; and

allocating one or more first ring voltages and one or more second ring voltages among the first and second telephone lines, the first and second ring voltages  
10 allocated to ensure that a total instantaneous load placed on a network interface device coupled to the first and second telephone lines does not exceed a determined threshold level.

15 15. The method of Claim 14, wherein allocating the first and second ring voltages comprises staggering the first and second ring voltages such that the one or more first ring voltages on the first telephone line are generated at different times than the one or more second  
20 ring voltages on the second telephone line.

16. The method of Claim 15, wherein staggering the first and second ring voltages comprises staggering the first and second ring voltages after determining that the  
25 total instantaneous load placed on the first and second telephone lines exceeds the determined threshold level.

17. The method of Claim 14, wherein allocating the first and second ring voltages comprises initiating  
30 simultaneous generation of the first and second ring voltages.

10017209-121301

18. The method of Claim 17, wherein initiating simultaneous generation of the first and second ring voltages comprises initiating simultaneous generation of the first and second ring voltages after determining that  
5 the total instantaneous load placed on the first and second telephone lines does not exceed the determined threshold load.

19. The method of Claim 14, further comprising  
10 measuring a load placed on each of the telephone lines.

20. The method of Claim 14, further comprising:  
extracting class of service information from the incoming calls; and  
15 communicating the class of service information for each incoming call to the telephone line associated with the incoming call during the generation of the ring voltage on the telephone line associated with the incoming call.

20

10017209.121301

21. The method of Claim 14, further comprising:  
decoding dual-tone multi-frequency touch tones  
received over one of the telephone lines;

mapping all telephone numbers associated with the  
5 telephone lines to a selected telephone line in response  
to a first function identified by the decoded tones;

mapping a selected telephone number to a selected  
telephone line in response to a second function  
identified by the decoded tones; and

10 redirecting an incoming call from one of the  
telephone lines to another of the telephone lines in  
response to a third function identified by the decoded  
tones.

15 22. The method of Claim 14, further comprising:  
drawing at least some power for the network  
interface device from a local power supply;

drawing power from the subscriber line after the  
local power supply fails; and

20 allowing communication over at least one of the  
telephone lines after the local power supply fails.

23. The method of Claim 14, further comprising  
instructing a switch to alternately couple one of the  
25 telephone lines to either the network interface device or  
a splitter, the splitter operable to receive ringing  
power for the telephone line and line power for the  
network interface device, the splitter operable to  
communicate the line power to the network interface  
30 device and the ringing power to the telephone line.

10017209-121301



24. The method of Claim 14, further comprising communicating with at least one digital device.

25. The method of Claim 14, wherein each of the one  
5 or more first ring voltages have a duration of two seconds followed by a four second pause.

10017209-121301

26. Software for providing service to a subscriber, the software embodied in at least one computer-readable medium and when executed by one or more processors operable to:

5       receive at least two incoming calls over a subscriber line;

          identify a first telephone line and a second telephone line associated with the incoming calls; and

          instruct an interface to the first and second  
10   telephone lines to generate one or more first ring voltages on the first telephone line and one or more second ring voltages on the second telephone line, the first and second ring voltages allocated to ensure that a total instantaneous load placed on the interface does not  
15   exceed a determined threshold level.

10047209-121304

27. A network interface device, comprising:

means for receiving at least two incoming calls over  
a subscriber line;

means for generating one or more first ring voltages  
5 on a first telephone line and one or more second ring  
voltages on a second telephone line; and

means for allocating one or more first ring voltages  
and one or more second ring voltages among the first and  
second telephone lines, the first and second ring  
10 voltages allocated to ensure that a total instantaneous  
load placed on a network interface device coupled to the  
first and second telephone lines does not exceed a  
determined threshold level.

10017209-12104  
FOI b6 b7C

28. A network interface device, comprising:

a first interface operable to receive at least two incoming calls over a subscriber line;

5 a second interface operable to facilitate communication between the first interface and a first telephone line and between the first interface and a second telephone line, the second interface also operable to generate one or more first ring voltages on the first telephone line and one or more second ring voltages on  
10 the second telephone line; and

a processor coupled to the first interface and the second interface, the processor operable to instruct the second interface to generate the first and second ring voltages in response to receiving the incoming calls, the  
15 generation of the ring voltages staggered such that the one or more first ring voltages on the first telephone line are generated at different times than the one or more second ring voltages on the second telephone line.

10017209.121301

29. A network interface device, comprising:

a first interface operable to receive at least two incoming calls over a subscriber line;

5 a second interface operable to facilitate communication between the first interface and a first telephone line and between the first interface and a second telephone line, the second interface also operable to generate one or more first ring voltages on the first telephone line and one or more second ring voltages on  
10 the second telephone line; and

a processor coupled to the first interface and the second interface, the processor operable to:

determine whether a total load placed on the first and second telephone lines exceeds a threshold  
15 load; and

instruct the second interface to generate the first and second ring voltages on the telephone lines, the first and second ring voltages generated simultaneously when the total load placed on the  
20 telephone lines does not exceed the threshold load, the first and second ring voltages staggered when the total load placed on the telephone lines exceeds the threshold load.

10017209.121301